

**From:** Russell Banush  
**To:** David Good; Martin Reineman; Linc Wehrly  
**Subject:** Fw: New Fuel Type Code 19 Cert Diesel (8 - 15 ppm sulfur) - SPCR 6221  
**Date:** 09/06/2006 11:02 AM

---

FYI

Regards,  
Russ Banush

----- Forwarded by Russell Banush/AA/USEPA/US on 09/06/2006 11:01 AM -----

**"Matthews, Jim"**  
**<matthewsj@saic-**  
**solutions.com>**

Sent by: "Matthews, Jim"  
<matthewsj@saic-  
solutions.com>

Received Date:  
09/06/2006 11:06 AM  
Transmission Date:  
09/06/2006 11:06:25 AM

To Sandra Somoza/AA/USEPA/US@EPA, William  
Courtois/AA/USEPA/US@EPA  
cc Bruce Kolowich/AA/USEPA/US@EPA, Karen  
Danzeisen/AA/USEPA/US@EPA, Mary  
Manners/AA/USEPA/US@EPA, Russell  
Banush/AA/USEPA/US@EPA, Linc  
Wehrly/AA/USEPA/US@EPA, Aiman Nachawati  
<anachawa@csc.com>  
Subject New Fuel Type Code 19 Cert Diesel (8 - 15 ppm sulfur)  
- SPCR 6221

I understand the direction and requirements to be:

1. Add a new Vehicle Fuel Type 19 as 'CERT DIESEL (8 - 15 PPM SULFUR)'
2. Establish the Fuel Economy calculation for Fuel Type 19 as:  
$$FE = 2778 \text{ (gram C / gallon)} / (0.866 \times HC \text{ (gm / mi)} + 0.429 \times CO \text{ (gm / mi)} + 0.273 \times CO_2 \text{ (gm / mi)})$$
3. Set the editing constraints for manufacturer submitted Fuel Batch values as:  
Carbon Weight Fraction - Minimum '0.864' and Maximum '0.873'  
Net Heating Value - Minimum '18300' and Maximum '19100'  
Specific Gravity - Minimum '0.800' and Maximum '0.882'  
Fuel Density - Minimum '6.8' and Maximum '7.3' (note: I believe the Fuel Density for diesel fuel is neither required nor used by CFEIS but values are included in the editing table FL\_PRPTY.)
4. In other respects, treat Fuel Type 19 the same as Fuel Type 9 (Diesel (EPA Diesel #2)) is now treated.

This will require new entries in tables VEH\_FL\_TYP, FL\_PRPTY, and MTDS\_FL\_CLC.

Two modules, MT\_Fuel\_Prop\_Sbsys.sql and VI\_Verify\_Test\_Data.sql, will require modification to handle the new Fuel Type.

I anticipate 6 to 8 hours of effort to implement these changes. The majority will be validation checks and CM. Given the present priorities I hope to install this change into production before September 13.

James F. Matthews  
SAIC  
CIS Help Desk  
703-292-6323

-----Original Message-----

From: Somoza.Sandra@epamail.epa.gov  
[mailto:Somoza.Sandra@epamail.epa.gov]  
Sent: Thursday, August 31, 2006 5:21 PM  
To: Courtois.William@epamail.epa.gov  
Cc: Kolowich.Bruce@epamail.epa.gov; Danzeisen.Karen@epamail.epa.gov;  
manners.mary@epamail.epa.gov; Matthews, Jim;  
banush.russell@epamail.epa.gov; Wehrly.Linc@epamail.epa.gov  
Subject: RE: Re: Fw: Fuel Type code

Bill,

The Code 19 description of Cert Diesel (8-15 ppm sulfur) is fine with our Certification expert. CFEIS currently uses the calculation below

$$0.429 \times \text{CO} \left( \frac{\text{gm}}{\text{mi}} \right) + 0.273 \times \text{CO}_2 \left( \frac{\text{gm}}{\text{mi}} \right)$$
  
(the constants were checked against those contained in CFEIS)

to calculate fuel code 9 and will also use it to calculate fuel code 19. As for fuel code 29 we will not be implementing it in CFEIS since we do not anticipate using No-Sulfur Diesel in Light Duty in the near future. If anyone has any comments/concerns please feel free to send me an e-mail.

Thanks  
Sandra Somoza  
U.S. Environmental Protection Agency  
Office of Transportation and Air Quality  
Compliance and Innovative Strategies Division  
734 214-4704  
somoza.sandra@epa.gov

William  
Courtois/AA/USEP  
A/US  
EPA-OAR,OTAQ,LOD

Received Date:  
08/29/2006 12:53  
PM  
Transmission  
Date:  
08/29/2006  
12:53:24 PM

To  
"Matthews, Jim"  
<matthewsj@saic-solutions.com>  
cc  
Karen Danzeisen/AA/USEPA/US@EPA,  
Mary Manners/AA/USEPA/US@EPA,  
Russell Banush/AA/USEPA/US@EPA,  
Sandra Somoza/AA/USEPA/US@EPA,  
Bruce Kolowich/AA/USEPA/US@EPA  
Subject  
RE: Re: Fw: Fuel Type code  
(Document link: Sandra Somoza)

James Matthews,

I recommend that code 19 and its description be as follows:

19 2007 Cert Diesel (8-15 ppm sulfur)

Don't do anything with code 29 at this time.

Regarding the constants used in the FE equation. We must sure be sure of the exact names, values and units. I believe you are looking for the values required in 40 CFR 600.113-93(f) where

40 CFR 600.113-93(f)(1) is the FE equation numerator of 2778 grams of carbon per gallon of diesel fuel  
40 CFR 600.113-93(f)(1)(i) is the carbon weight fraction

of diesel HC exhaust emission = 0.866  
40 CFR 600.113-93(f)(1)(ii) is the carbon weight fraction of  
carbon monoxide = 0.429  
40 CFR 600.113-93(f)(1)(iii) is the carbon weight fraction  
of carbon dioxide = 0.273

$$\text{FE} = \frac{2778 \text{ (gram C / gallon)}}{(\text{gm / mi})} \div (0.866 \times \text{HC (gm / mi)} + 0.429 \times \text{CO} + 0.273 \times \text{CO}_2 \text{ (gm / mi)})$$

Note: sometimes, for engineering purposes, the numerator grams C per gallon is calculated to get a better approximation of actual fuel economy as follows:

grams C per gallon = CWF X SG X 3781.8  
where  
CWF is the diesel fuel carbon weight fraction (around 0.867)  
SG is Specific Gravity of the diesel fuel (around 0.847)  
and the CFR says there are 3781.8 grams of water per gallon of water

Comments???

Bill Courtois  
US-EPA  
(734) 214-4352

"Matthews, Jim"  
<matthewsj@saic-solutions.com>  
Sent by:  
"Matthews, Jim"  
<matthewsj@saic-solutions.com>

Received Date:  
08/29/2006 12:28 PM  
Transmission  
Date:  
08/29/2006  
12:28:06 PM

To  
Karen Danzeisen/AA/USEPA/US@EPA  
cc  
William Courtois/AA/USEPA/US@EPA,  
Sandra Somoza/AA/USEPA/US@EPA,  
Russell Banush/AA/USEPA/US@EPA,  
Mary Manners/AA/USEPA/US@EPA  
Subject  
RE: Re: Fw: Fuel Type code

Attached is the list of the Fuel Type Codes currently used in CFEIS. (I pulled this from the Development system so although 19 appears here it is not in production. Code 29 is not currently in use. I have not implemented anything into production.

I will need the exact names as you want them listed. (You are limited to 43 characters at present.) We also need the constants used in the FE calculations (table MTDS FL CLC) and the values for the fuel property table. For testing I just copied the values for fuel type 9.

James F. Matthews  
SAIC  
CIS Help Desk  
703-292-6323

From: Danzeisen.Karen@epamail.epa.gov  
[mailto:Danzeisen.Karen@epamail.epa.gov]  
Sent: Tuesday, August 29, 2006 11:56 AM

To: Matthews, Jim  
Cc: courtois.william@epamail.epa.gov; somoza.sandra@epamail.epa.gov;  
banush.russell@epamail.epa.gov; manners.mary@epamail.epa.gov  
Subject: Fw: Re: Fw: Fuel Type code

Jim:

Here's the details on what the fuel type descriptions should read for 19 and 29 (if available). If 29 is not available, Sandra can negotiate a different, available code with Bill.

---

Karen E. Danzeisen  
Information Technology Specialist  
Office of Transportation and Air Quality  
U.S. Environmental Protection Agency  
(734)214-4444 danzeisen.karen@epa.gov

Check out EPA's Green Vehicle Guide at "www.epa.gov/greenvehicles"

-----Forwarded by Karen Danzeisen/AA/USEPA/US on 08/29/2006 11:53AM

-----  
To: Bruce Kolowich/AA/USEPA/US@EPA  
From: William Courtois/AA/USEPA/US  
Date: 08/28/2006 05:26PM  
cc: Karen Danzeisen/AA/USEPA/US@EPA, Maria Peralta/AA/USEPA/US@EPA, Mary Manners/AA/USEPA/US@EPA, Nancy Tschirhart/AA/USEPA/US@EPA  
Subject: Re: Fw: Fuel Type code

Bruce,

Big thanks for the thorough response. Nancy also explained the CFR terminology misalignment with the established order in the petroleum industry.

19 and 29 are fuel type codes that translate into unique fuel descriptions for CFEIS & VERIFY. 19 would translate into what you call, "2007 Cert Diesel (8-15 ppm sulfur, currently 9 ppm)" and is what CISC wanted to call "Ultra Low Sulfur Diesel(Sulfur<15ppm)". Historically we used 9 for Cert Diesel (what you now call "1994 Cert Diesel (0-500 ppm sulfur, currently 330 ppm)". There is no code for "No-Sulfur Diesel (0-1 ppm sulfur, currently about 0.6 ppm)". I proposed using 29, if necessary to differentiate Subpart B from Subpart C, for what I called the "Ultra Low Sulfur Diesel(86.1065-205(a)(1))".

I don't know if it is going to be possible to put the ULSD genie back in the bottle.

Mary,

Karen D. is gone until September 5. What can you do to help solve this fuel description issue before "ULSD" gets permanently embedded in CFEIS/VERIFY. I agree with Bruce. CISC should avoid using the "Ultra Low Sulfur Diesel" name and choice made last week should be revised. We need to make sure that CFEIS/VERIFY give appropriate fuel identification to manufactures and to the laboratorise when requesting testing services. We need to avoid any confusion about which fuel is to be put into a vehicle for testing.

Bill Courtois  
US-EPA  
(734) 214-4352  
Bruce Kolowich/AA/USEPA/US

Bruce  
Kolowich/AA/USEPA/US  
EPA-OAR,OTAQ,LOD

To

Received Date:  
08/28/2006 04:52 PM  
Transmission Date:

William Courtois/AA/USEPA/US@EPA

08/28/2006 04:52:52 PM

cc

Karen Danzeisen/AA/USEPA/US@EPA,  
Maria Peralta/AA/USEPA/US@EPA, Mary  
Manners/AA/USEPA/US@EPA, Nancy  
Tschirhart/AA/USEPA/US@EPA

Subject

Re: Fw: Fuel Type code

Hi Guys,

All tags referring to "Low Sulfur Diesel" should have been removed by now. If any remain, let me know and I can have them changed. Nancy and my concern comes from the fact that the Certification Test Diesel as specified in part 1065 is referred to as Ultra Low Sulfur Diesel (ULSD), but this term is in common use in the refinery community, and refers to a different fuel, namely, diesel fuel with less than 1 ppm sulfur. In reviewing the regs, Nancy and I came to the conclusion that a single fuel would satisfy the 2007 chassis, new HD engine, and new non-road regs. This is the fuel is the 8-15 ppm sulfur diesel that we decided to designate internally as 2007 Cert Diesel.

In fact, we currently have three different diesel fuels in our USTs. One is the 2007 Cert Diesel that I just mentioned, the second is the previous, 330 ppm sulfur, Certification Test Diesel that we have designated 1994 Cert Diesel. This is because it was the 1994 reg change to limit the sulfur level to 500 ppm that specified this fuel (the previous 1000 ppm fuel was specified in the 1991 regs), and the third UST stored fuel is a "Zero" sulfur diesel that we refer to in-house as no-sulfur fuel. This third fuel is commonly referred to industrially as ULSD, hence the internal confusion.

So, we have changed the names of our three fuels internally to:

2007 Cert Diesel (8-15 ppm sulfur, currently 9 ppm)  
1994 Cert Diesel (0-500 ppm sulfur, currently 330 ppm)  
No-Sulfur Diesel (0-1 ppm sulfur, currently about 0.6 ppm)

and plan to remove any reference to "Ultra Low Sulfur Diesel" from our internal designations. It should be clear when performing a test if the test is a cert or recall test, and all cert tests will now use 2007 cert diesel. Only designated recall tests that were certified on the old 500 ppm fuel will use the 1994 cert diesel, and I expect these to be rare.

I don't feel strongly as to the nomenclature or designations in the CFR. Most of our past internal practice was to call fuels by names such as "Certification Test Gasoline", and these latest names for diesel fuels seemed to be a natural extension of that. Personally, I think it's a mistake to leave the words Ultra Low Sulfur Diesel in the CFR, when the refinery community uses those words for something else, but as long as we know what we have and are using in-house, I don't think it will affect lab operations.

Comments?

Bill,

I'm not sure what the "19" and "29" refers to in some of your proposed names, can you let me know?

Thanks,

(Embedded image moved to file: pic22431.gif)  
William Courtois/AA/USEPA/US

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To

Karen Danzeisen/AA/USEPA/US@EPA

cc

Mary Manners/AA/USEPA/US@EPA, Bruce  
Kolowich/AA/USEPA/US@EPA, Maria  
Peralta/AA/USEPA/US@EPA

Subject

Re: Fw: Fuel Type code

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Karen,

Bruce K. and Nancy T. are a bit concerned about the choice of terms for describing this fuel (neither one was here last week). The concern derives from observed confusion "ultral low sulfur diesel" has presented to people with respect to Subpart B fuel, Subpart C fuel and no-sulfur fuel.

I did a little research and:

I did not find the terms "ULSD" or , "Ultra Low Sulfur" in Part 86 Subpart B. The diesel fuel specifications are in 40 CFR Part 86.113-07(b) (2).

I did find the term "Ultra Low Sulfur Diesel" in 40 CFR Part 86 Subpart C in 86.1065-205(a) (1) Test fuel specificaiton for distillate diesel fuel.

The term "ULSD", without fuel specification is found in a 40 CFR Part 69 rulemaking for "Control of Air Pollution From Motor Vehicles and Nonroad Diesel Engines: Alternative Low-Sulfur Diesel Fuel Transition Program for Alaska." Its not clear which fuel specifications apply in the this case since its focus was on fuel available to consumers.

In addition,

CFR 86.113-07(b) (2) and CFR 86.1065-205(a) (1) fuel specifications are nearly the same. The chief difference is minimum aromatic content of 27 percet in the former and 10 percent in the latter. The allowable range of sulfur values is the same (7-15 ppm).

86.113 specificatinos satisfy 86.1065 but 86.1065 does not satisfy the requirements of 86.113.

Proposal:

Either,  
restrict the "19 Ultra Low Sulfur Diesel (ULSD, Sulfur<=15ppm)" to  
usage per 86.1065 and come up with a new code and a new description for  
testing subject to 86.113-07(b) (2).  
or  
Do not use the term "Ultra Low Sulfur Diesel" and come up with  
other names.  
or use  
"19 Ultra Low Sulfur Diesel (86.113-07(b) (2))" and "29 Ultra Low  
Sulfur Diesel (86.1065-205(a) (1))"  
or  
something else.

Everyone,

I recommend that the plastic (and other) tags on fuel dispensers  
match the fuel type codes and descriptions as much as possible. The  
current tags of "2007 CERT DIESEL 10 PPM SULFUR" tanks 25N & 25S and  
"2004 CERT DIESEL 300 PPM SULFUR" tank 26S are difficult to match to  
CISD description. Confusion is compounded by other descriptions found  
on tank diagrams such as "no sulfur diesel" fuel in tank 22, "Low  
Sulfur" in tanks 25N & 25S, and "Cert Diesel" tanks 26S. I believe  
that we have additional diesel fuels in barrels.

I prefer "19 Ultra Low Sulfur Diesel (86.113-07(b) (2))" for the fuel  
in tanks 25N & 25S.

Karen,

Why not use "19 2007 CERT DIESEL 10 PPM SULFUR" as the code and  
description?

Bruce,

What do you recommend we use for tags and fuel names?

Bill Courtois  
US-EPA  
(734) 214-4352  
Karen Danzeisen/AA/USEPA/US

Karen  
Danzeisen  
/AA/USEPA  
/US  
EPA-OAR, O  
TAQ, CISD

To

William  
Courtois/AA/USEPA/US@EPA

Received  
Date:  
08/24/200  
6 02:05  
PM  
Transmiss  
ion Date:  
08/24/200  
6  
02:05:39  
PM

cc

Subject

Re: Fw: Fuel Type code



So true. I actually just made the typo in the email and not the database.

---

Karen E. Danzeisen  
Information Technology Specialist  
Office of Transportation and Air Quality  
U.S. Environmental Protection Agency  
(734)214-4444 danzeisen.karen@epa.gov

Check out EPA's Green Vehicle Guide at "[www.epa.gov/greenvehicles](http://www.epa.gov/greenvehicles)"

William Courtois/AA/USEPA/US

William  
Courtois/A  
A/USEPA/US  
EPA-OAR,OT  
AQ,LOD

To

Karen  
Danzeisen/AA/USEPA/US@EPA

Received  
Date:  
08/24/2006  
01:54 PM  
Transmissi  
on Date:  
08/24/2006  
01:54:42  
PM

cc

Subject

Re: Fw: Fuel Type code  
Link

Karen,  
(no 'e' in sulfur)

"Ultra Low Sulfur Diesel(ULSD,Sulfur<=15ppm)"

Thanks  
Bill Courtois  
US-EPA  
(734) 214-4352  
Karen Danzeisen/AA/USEPA/US

Karen  
Danzeisen  
/AA/USEPA  
/US  
EPA-OAR,O  
TAQ,CISD

To

William  
Courtois/AA/USEPA/US@EPA

Received  
Date:  
08/24/2006  
6 11:44  
AM  
Transmissi  
on Date:

cc

Subject

Re: Fw: Fuel Type code

08/24/2006  
6  
11:44:02  
AM

I had enough space to make the description of fuel type 19 as:

"Ultra Low Sulfur Diesel (ULSD, Sulfur<=15ppm) "

---

Karen E. Danzeisen  
Information Technology Specialist  
Office of Transportation and Air Quality  
U.S. Environmental Protection Agency  
(734) 214-4444 danzeisen.karen@epa.gov

Check out EPA's Green Vehicle Guide at "[www.epa.gov/greenvehicles](http://www.epa.gov/greenvehicles)"

William Courtois/AA/USEPA/US

William  
Courtois/A  
A/USEPA/US  
EPA-OAR,OT  
AQ,LOD

To

Karen  
Danzeisen/AA/USEPA/US@EPA

Received  
Date:  
08/24/2006  
10:57 AM  
Transmissi  
on Date:  
08/24/2006  
10:57:32  
AM

cc

Subject

Re: Fw: Fuel Type code  
Link

Karen,

19 Ultra Low Sulfur Diesel (ULSD) S<=15ppm

Bill Courtois  
US-EPA  
(734) 214-4352  
Karen Danzeisen/AA/USEPA/US

Karen  
Danzeisen  
/AA/USEPA  
/US  
EPA-OAR,O  
TAQ,CISD  
Sent by:  
Karen  
Danzeisen

To

William  
Courtois/AA/USEPA/US@EPA

cc

Received  
Date:  
08/24/2006 10:47  
AM  
Transmission Date  
:  
08/24/2006 10:47:55  
AM

Subject

Fw: Fuel Type code

Bill:

It looks like we need to add a new test fuel type code into CFEIS for ULSD Diesel. Right now we only have a generic looking 'Diesel' code of 9. Russ Banush says you have established codes in your system. Could you please tell me what they are?

Thanks,

Karen

---

Karen E. Danzeisen  
Information Technology Specialist  
Office of Transportation and Air Quality  
U.S. Environmental Protection Agency  
(734) 214-4444 danzeisen.karen@epa.gov

Check out EPA's Green Vehicle Guide at "[www.epa.gov/greenvehicles](http://www.epa.gov/greenvehicles)"

----- Forwarded by Karen Danzeisen/AA/USEPA/US on 08/24/2006 10:45 AM

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To

Mary Manners/AA/USEPA/US@EPA, Karen  
Danzeisen/AA/USEPA/US@EPA, Sandra  
Somoza/AA/USEPA/US@EPA

cc

Subject

Fw: Fuel Type code

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LOD has codes for low and ultra low sulfur diesel, but we apparently do not have these in CFEIS. How do we respond to Mercedes' question?

Regards,  
Russ Banush

----- Forwarded by Russell Banush/AA/USEPA/US on 08/24/2006 09:29 AM  
-----

andreas.roe  
ssler@daiml  
erchrysler.  
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Sent by:  
andreas.roe  
ssler@daiml  
erchrysler.  
com

To  
Russell  
Banush/AA/USEPA/US@EPA  
cc

Received  
Date:  
08/24/2006  
02:26 AM  
Transmission  
Date :  
08/24/2006  
02:26:05 AM

Subject  
Fuel Type code

Hello Russ

hope things going well. I have another questions for you about CFEIS and the Fuel type code used in the mtds sheets.

CFEIS only provide the CODE 09 for diesel fuel. Do we have to use this code also for the MY 2007 ultra low diesel fuel (< 15 ppm sulfur).

Please advise

Thanks again

(Embedded image moved to file: pic07877.jpg)

Mit freundlichen Grüßen/With best regards

Andreas Rössler Dr.-Ing. / Dipl. Wirtsch.-Ing.  
DaimlerChrysler AG | Mercedes Car Group: Development | EP/QZE  
Certification Exhaust & Emission USA

Tel: +49-(0)7031-90-40250  
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(See attached file: fuel\_types.lst) (See attached file: fl\_property.lst)  
(See attached file: mtds\_fl\_clc.lst)